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⑫公開特許公報(A)　昭62-129759

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⑤4発明の名称　毛管流れ装置

⑳特　願　昭61-182050

㉒出　願　昭61(1986)8月4日

優先権主張　㉜1985年8月5日㉝米国(US)㉛762748

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明細書の浄書(内容に変更なし)

明　細　書

1. 発明の名称

毛管流れ装置

2. 特許請求の範囲

1. 装置を使用して流体媒質中の分析対象を測定する方法であって、前記装置は、該装置内の流体媒質を動かすための駆動力として作用する少なくとも1つの毛管ユニット、少なくとも1つのチャンバーユニット、入口、前記入口から離れた出口、および前記装置内に収容された試薬を含んで成り、前記試薬は検出系の1構成員であり、前記毛管はアッセイ媒質の計量ポンプおよび流れ制御器として作用して時間制御された前記試薬との反応を提供し、前記方法は、

前記入口を通して流体試料を前記ユニットの1つの中に導入し、そして前記流体試料を1つのユニットから次のユニットに前記毛管ユニットにより制御された速度で移動させ、そして前記試薬と反応させて、前記検出系により生成された検出可能な信号を発生させ、

そして前記信号を前記流体媒質中の前記分析対象の存在の測定結果として決定する、

ことを含んで成ることを特徴とする方法。

2. 前記検出系が粒子を含み、そして粒子の通路を光散乱器で観測する特許請求の範囲第1項記載の方法。

3. 少なくとも1つのチャンバーユニットがフィルターを含む特許請求の範囲第1項記載の方法。

4. 装置を使用して流体媒質中の分析対象を測定する方法であって、前記装置は少なくとも2つの毛管ユニット、該毛管ユニットにより分離されている少なくとも2つのチャンバーユニット、入口、前記入口から離れた出口、およびチャンバーユニットA内で装置表面へ結合した試薬を含んで成り、前記試薬は検出系の1構成員であり、ここで前記毛管はアッセイ媒質の流速を制御して、時間制御された前記試薬との反応を提供し、前記方法は、

前記入口を通して前記流体媒質を第1チャンバーユニットに導入し、

REFERENCE(5)

Application No.:	182050/1986
Application Date:	August 4, 1986
Convention Priority(ies):	US Pat. Appln. No. 762748 (Filed on August 5, 1985)
Publication No.:	129759/1987
Publication Date:	June 12, 1987
Applicant:	Biotrack Inc.
Inventor:	Cobb; Michael E. Allen; Jimmy D.

Title of Invention: "Capillary flow device"

Number of Independent Claim(s): 17

Result of Patent Family Search for JP-A-62-129759

DIALOG(R)File 352:Derwent WPI

007057978
WPI Acc No: 1987-057975/198709
Analyte determn. in a fluid - using a device having a capillary unit acting as the motive force for moving the fluid
Patent Assignee: BIOTRACK INC (BIOT-N); BIOTRACK (BIOT-N)
Inventor: ALLEN J D; COBB M E; GIBBONS I; HILLMAN R S; OSTOICH V E; WINFREY L J
Number of Countries: 015 Number of Patents: 023
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 212314	A	19870304	EP 86110184	A	19860724	198709	B
AU 8660884	A	19870212				198715	
• JP 62129759	A	19870612	JP 86182050	A	19860804	198729	
US 4756884	A	19880712	US 86880793	A	19860701	198830	
US 4948961	A	19900814	US 88177625	A	19880405	199035	
US 4963498	A	19901016	US 88144416	A	19880115	199044	
CA 1275231	C	19901016				199047	
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			US 91651283	A	19910205		
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US 5144139	A	19920901	US 85762748	A	19850805	199238	
			US 86880793	A	19860701		
			US 88177625	A	19880405		
			US 90472130	A	19900130		
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			US 91732596	A	19910719		
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			US 86880793	A	19860701		
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US 5300779	A	19940405	US 85762748	A	19850805	199413	
			US 86880793	A	19860701		
			US 88177625	A	19880405		
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JP 6094722	A	19940408	JP 86182050	A	19860804	199419	
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JP 7092169	A	19950407	JP 86182050	A	19860804	199523
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Priority Applications (No Type Date): US 86880793 A 19860701; US 85762748 A 19850805; US 88177625 A 19880405; US 88144416 A 19880115; US 90472130 A 19900130; US 91651283 A 19910205; US 91734597 A 19910723; US 91732596 A 19910719; US 92931719 A 19920818

Cited Patents: 3.Jnl.Ref; A3...8929; AT 376300; DE 2007405; DE 3134611; No-SR.Pub; US 3799742; US 4088448; US 4233029

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 212314	A	E	70		
Designated States (Regional): AT BE CH DE FR GB IT LI LU NL SE					
US 4756884	A		20		
US 5140161	A		20	G01N-021/49	CIP of application US 85762748 Div ex application US 86880793 Div ex application US 88177625 Cont of application US 90472130 Cont of application US 91651283 Div ex patent US 4756884 Div ex patent US 4948961
US 5144139	A		20	G01N-021/49	CIP of application US 85762748 Div ex application US 86880793 Div ex application US 88177625 Cont of application US 90472130 Cont of application US 91651283 Div ex patent US 4756884 Div ex patent US 4948961 Cont of patent US 5004923
US 5164598	A		20	G01N-021/49	CIP of application US 85762748 Div ex application US 86880793 Div ex application US 88177625 Cont of application US 90472130 Div ex patent US 4756884 Div ex patent US 4948961 Cont of patent US 5004923
US 5300779	A		22	G01N-021/49	CIP of application US 85762748 Div ex application US 86880793 Div ex application US 88177625 Cont of application US 90472130 Cont of application US 91651283

			Div ex patent US 4756884 Div ex patent US 4948961 Cont of patent US 5004923 Cont of patent US 5164598
EP 212314	B1 E	36 G01N-021/03	
Designated States (Regional): AT BE CH DE FR GB IT LI LU NL SE			
JP 6094722	A	24 G01N-033/86	Div ex application JP 86182050
JP 6094723	A	23 G01N-033/86	Div ex application JP 86182050
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DE 3689812	G	G01N-021/03	Based on patent EP 212314
JP 94058373	B2	22 G01N-033/86	Based on patent JP 62129759
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JP 95104356	B2	23 G01N-033/86	Div ex application JP 86182050 Based on patent JP 7092169
JP 95117546	B2	23 G01N-033/86	Div ex application JP 86182050 Based on patent JP 6094724
JP 2595422	B2	23 G01N-033/86	Div ex application JP 86182050 Previous Publ. patent JP 6094723

Abstract (Basic): JP 7092169 A

A method for determining an analyte in a fluid medium uses a device comprising at least one capillary unit acting as the motive force for moving the fluid medium in the device, at least one chamber unit, an inlet port, an outlet port distant from the inlet port and a reagent contained within the device, the reagent being a member of a detection system, where the capillary acts as a metering pump and flow controller of the assay medium through the device to provide for a time controlled reaction with the reagent.

A fluid sample is introduced through the inlet port into one of the units, and the fluid allowed to transit from one unit to the next unit at a rate controlled by the capillary unit and react with the reagent resulting in a detectable signal produced by the detection system. Pref. the device is made from acrylonitrile -butadiene -styrene copolymer.

USE/ADVANTAGE - The method can be used with a wide variety of fluids, partic. physiological fluids, for detection of e.g. drugs, pathogens, glucose or serum enzymes. The devices provide for simple measurements of volumes, mixing of reagents, incubations and visual or instrumental determn. of the result.

EP 212314 A

A method for determining an analyte in a fluid medium uses a device comprising at least one capillary unit acting as the motive force for moving the fluid medium in the device, at least one chamber unit, an inlet port, an outlet port distant from the inlet port and a reagent contained within the device, the reagent being a member of a detection system, where the capillary acts as a metering pump and flow controller of the assay medium through the device to provide for a time controlled reaction with the reagent.

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Dwg.0/8

Abstract (Equivalent): EP 212314 B

A method for determining the presence of an amount of an analyte in, or a property of, a fluid sample comprising: applying said sample to a device (10) comprising an entry port (14) for said sample, a vent (22), a capillary pathway containing a chamber (12,20) connecting said entry port (14) to said vent (22), and a reagent (16,24) in said capillary pathway (12,20), wherein said sample flows through said capillary pathway (12,20) under capillary forces and interaction of said reagent (16,24) with said sample modifies viscosity of said sample or a characteristic of said sample associated with said flow; allowing said sample to interact with said reagent (16,24) and traverse at least a portion of said capillary pathway (12,20); detecting said viscosity or flow characteristic; and relating said viscosity or flow characteristic to the presence or amount of said analyte in or, to said property of, said fluid sample.

Dwg.1/8

Abstract (Equivalent): US 5300779 A

An assay based on measuring blood coagulation time is performed by inserting into an electronic monitor a housing with a capillary passage (12) between an inlet port (14) and a vent (22), and reagent (16) inducing blood clotting on the passage surface, and introducing a sample into the port before or after placing in the monitor.

The monitor detects coagulation by sensing interaction of light with particles in the passage, and the measured coagulation time is related to the presence or amount of analyte. In partic., the reagent is thromboplastin, and the sample is whole blood or blood from which red cells have been removed. The housing is e.g. of injection-moulded ABS.

ADVANTAGE - Allows individual assays to be carried out rapidly and accurately with min. equipment.

Dwg.1/8

US 5164598 A

A system for detecting the presence of an analyte in or a characteristic of blood comprises a housing (50) with a capillary passage (76) for drawing in blood solely by capillary attraction, and a reagent in the passage causing the blood to clot. A monitor can hold the housing and pass light through the passage to detect and analyse light scattering to determine when clotting occurs.

The housing is pref. hydrophobic and has at least a part of the walls treated to be hydrophilic, the passage having hydrophilic walls. The reagent is a member of a system providing a detectable signal in relation to the analyte or characteristic. The housing is pref. formed of cellulose acetate, polystyrene or ABS.

USE/ADVANTAGE - E.g, detection of prothrombin time, crosslinked

fibrin dimer, or direct or indirect blood grouping, permits rapid and convenient testing.

US 5144139 A

Agglutination of particles is detected by adding a fluid sample to a capillary passageway in a cartridge contg. a diagnostic reagent that reacts with the sample to produce an agglutination system, and passing a light beam (e.g. laser) through the sample to detect agglutinated particles.

ADVANTAGE - Rapid testing. (Dwg.2a/8)e

US 5140161 A

An analyte in a blood sample is determined using a device with a capillary passageway (76) for moving blood into the device and which contains a reagent interacting with the blood to cause a change in fluidity to provide a detectable signal. Change in fluidity is used as a measure of the presence of an analyte or a property of the sample.

The detectable signal is pref. change in sample flow rate, clotting of the sample or a change in light transmission or emission. The device may be made as an injection moulding of e.g. ABS, and the reaction may involve the binding of members of a pair or an enzyme reaction.

ADVANTAGE - Permits rapid determination with min. user manipulation. (Dwg.2a/8)

US 5004923 A

Control device for detecting depletion of a particle contg fluid from a sample reservoir comprises (a) a light source to impinge on fluid in the reservoir, (b) and a light detector close to a capillary exiting the reservoir to collect light reflected by the particles. (c) A signal generator attached to the light source and (d) a filter operably attached to the output of the detector.

ADVANTAGE - Easier analysis of red cell blood count.

US 4963498 A

Analytical flow process comprises monitoring the flow of test sample soln. and reagent(s) through a narrow tube under the combined effects of capillary force and gravitation by measurement of colour intensity, optical refraction, viscosity, conductance, etc; and comparison of the results with those obtd. using standard solns.

USE - The process is an aid for rapid clinical analysis and diagnosis. (20pp)n

US 4948961 A

A control device capable of simulating the flow of a particle-contg. fluid that is being measured by an analytical instrument utilising an analysis cartridge with an internal chamber through which particulate contg. fluids pass is provided.

The device comprises a control cartridge, a liq. crystal cell within said cartridge such to interpose between a light source and a light detector in the analytical instrument. A polarizing filter is provided close to the liq. crystal cell in the control cartridge so as to alternately allow and block passage of light between the light source and the detector when the voltage applied to the cell is modulated.

USE - For rapid analytical testing. (20pp)

US 4756884 A

Analytical device for detecting the presence of an analyte in a physiological fluid comprises a first capillary unit for pumping a

liquid from an inlet part to a chamber in a housing, and a second capillary unit between the chamber and an exit.

The housing contains a reagent of cpds. affecting blood clotting and antibodies. Two chambers may be disposed in the capillary path.

ADVANTAGE - Automatic monitoring of medicines.

Derwent Class: A89; B04; D15; J04; S03; S05
International Patent Class (Main): G01N-021/03; G01N-021/49; G01N-033/86
International Patent Class (Additional): B01L-003/00; B29C-065/08; G01D-018/00; G01N-011/04; G01N-015/14; G01N-021/00; G01N-021/01; G01N-021/51; G01N-031/22; G01N-033/48; G01N-033/483; G01N-033/50; G01N-033/53; G01N-033/543; G01N-035/00; G01N-035/02